

SHARPENING MEANS FOR DRILLING TOOLS

BACKGROUND OF THE INVENTION

The invention relates to a sharpening means for drilling tools having a grinding segment set with hard material, in particular diamond drilling tools for stone having geometrically undefined diamond cutting edges, which are embedded in a carrier matrix.

Drill bits with grinding segments are set with hard material designed for use as core drill bits or solid drilling dull over their utilization time, in that spaces between the hard material particles embedded in a carrier matrix close up or said hard material particles break out. Usually, therefore, such drilling tools are re-sharpened, whereby the softer carrier matrix is partially removed in abrasive frictional contact by a sharpening means, whereby the previously embedded harder hard material particles form new grinding surfaces that are sharp again.

According to DE 4 027 821 A1, such a sharpening means is configured as a sharpening plate filled with corundum, carborundum [silicon carbide] and similar abrasive materials. The drawback of this process that such sharpening plates are cumbersome, heavy, expensive and are seldom accessible if they are used on the construction site. As a result, breakdowns and interruptions are frequent occurrences in the drilling operation.

SUMMARY OF THE INVENTION

The object of the invention is to provide a user friendly sharpening means, whereby drilling tools that have become dulled can be reasonably re-sharpened.

This object is achieved by a sharpening means filled with abrasive materials is configured chordlike for a drilling tool with grinding segments set with hard material. In the associated sharpening process, a chordlike or tapelike or tubular sharpening means is passed circumferential into a borehole or a circular ring gap previously created by the drilling tool itself and can then be compressed by the tool against the bottom of the blind hole to be friction locking fixed there and re-sharpening the grinding segments of the drilling tool.

Thus, the necessity of a cumbersome additional sharpening plate is eliminated. In addition, the sharpening means is virtually completely consumable.

Advantageously, when re-sharpening a low r.p.m. and/or lower cooling water supply is used relative to the suitable use of the drilling tool, whereby the sharpening, abrasive wear is accelerated.

Advantageously, the sharpening means of a quasi endless supply roll is configured to make it possible to cut it to length, whereby appropriately long, chordlike sharpening means are available on site for different borehole diameters.

Advantageously, the sharpening means forms a plurality of intentional break zones along its chordlike length, whereby corresponding cutting to length is facilitated.

Advantageously, the sharpening means is configured from a matrix filled with abrasive material; further advantageously, the sharpening means is comprised of a soft plastic matrix, whereby the abrasive materials are fixed distributed and opposing each other.

Alternatively advantageously, the sharpening means is configured of a water-insoluble tube that is filled with loose abrasive materials, whereby said materials are fixed relative to

each other within the tube. Further advantageously, the sharpening means is configured of a water-insoluble tube.

Advantageously, the tube is filled with a polymer that swells in water, whereby the wet circular ring gap made wet by the previous grinding the abrasive materials are locally fixed.

Advantageously, the thickness of the sharpening means is in the range of 1 mm to 10 mm, preferably in the range of 2 mm to 6 mm, which is common for the circular ring gap for concrete drilling tools.

BRIEF DESCRIPTION OF THE DRAWINGS

The exemplary embodiments of the invention will be more completely described with reference to the drawings , wherein:

Fig. 1 shows re-sharpening in a partially sectioned perspective representation according to the invention;

Fig. 2 shows the sharpening means in a first embodiment according to the invention; and

Fig. 3 shows the sharpening means in a second embodiment according to the invention.

DETAILED DESCRIPTION OF THE INVENTION

According to Fig. 1, a chordlike configured sharpening means 1 passes circumferential in a blind borehole 4 that was previously created by the drilling tool 2 itself having grinding segments 3 set with hard material, said borehole having a circular ring gap of approximately 5 mm in width. The approximately 4 mm thick sharpening means pressing

against the bottom of the blind borehole 4 is friction-locking fixed there and abrasively re-sharpens the grinding segments 3 of the drilling tool 2 moving relative to the bottom 5.

According to Fig. 2, the sharpening means 1 filled with abrasive materials 6 in a soft plastic matrix 7 is configured chordlike and designed to be cut to length from a virtually endless supply roll 8.

According to Fig. 3, the sharpening means to be cut to length is configured from a water insoluble tube 10, which is filled with loose abrasive materials 6 and with a polymer 11 that swells in the presence of water, and has distributed along its chordlike length a plurality of intended break zones.